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Complete Specification Left, 25th Nov., 1904—Accepted, 2nd Feb., 1905

PROVISIONAL SPECIFICATION.

Improvements in and relating to Means or Apparatus for Securing Holding Screws or the like in Substances.

We WILLIAM EDGAR SUCKLING, Engineer, of 16 Upper Melton Terrace, Melton, and ROBERT GIRLING, Builder, of Wellington Street, Ipswich, both in the County of Suffolk, do hereby declare the nature of this invention to be as follows:—

5 Our invention relates to a filling to enable screws or pins to obtain a firm hold in substances, in which they would otherwise be useless or unreliable.

It consists of the simple device of a bushing which may or may not be screwed on the outside and which is split at one end or if more convenient may be split throughout its entire length. The hole to have a screw thread of
10 full depth, at the end which is not split, tapered away to a shallow thread or a plain hole at the other end, according to whether the screw is required to project from the article into which it is inserted or to go right home.

As an alternative a full taper thread may be cut in the bushing, with the small part where split. Or as a second alternative the bushing may be of
15 sufficiently soft material (such as lead) to permit the screw to cut its own way into it. Or as a third alternative the bushing may have a plain taper hole to enable it to be used with a nail or plain pin, or hook.

The principle of the invention involves the opening out of a bushing in a hole into which it can easily be inserted, by means of a screw or pin which it is
20 desired to fix in it.

The applications to which this can be adapted are extremely varied and numerous.

Amongst others might be mentioned the following:—

1. For attaching anything to bricks, stonework or plaster by means of screws
25 such as nameplates, bells, pipes and for other like uses.

2. For fixing a screwed hook to a wall, ceiling or floor for pictures, lamps and for other uses.

3. For purposes of lifting heavy stonework or similar material by means of a screwed eyebolt.

30 4. For fastening stones, bricks, gutta-percha and like materials to each other, in exactly the same way as can be done with set screws in the case of material which will hold a reliable screw thread such as iron and wood.

5. For securing structures or machines to their foundations either on land or under the sea when the said foundations are capable of resisting the expansion
35 of a bush inserted in them.

6. For clamping overhung portions of architectural structures to the main portion when they would otherwise be unsafe.

7. For holding parts of delicate instruments together which will not satisfactorily carry a screw thread.

40 8. For attaching electrical instruments to slate or marble switchboards without necessitating a hole being drilled completely through the said slate or marble which is often objectionable, expensive and dangerous.

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Means or Apparatus for Securing Holding Screws or the like in Substances.

9. For attaching anything to glass without the objectionable strains set up by bolts or rivets such for example as fixing the letters of an advertisement to a plate glass shop window.

10. For connecting a flanged iron pipe to an existing stoneware drain pipe to act as a branch. 5

11. For fixing heavy glass and porcelain vases and other receptacles to their metal pedestals.

12. For use in a screw hole which has been accidentally stripped of its thread.

13. For fixing iron casement frames and door frames to stone or brickwork. 10

14. For electric wiring including the fixing of wire casing to walls and attaching telephone, telegraph and other cables to buildings with the aid of insulating brackets.

Dated the 26th day of February 1904.

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Agents for the Applicants

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COMPLETE SPECIFICATION.**Improvements in and relating to Means or Apparatus for Securing Holding Screws or the like in Substances.**

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We WILLIAM EDGAR SUCKLING, Engineer, of 16 Upper Melton Terrace, Melton, and ROBERT GIRLING, Builder, of Wellington Street, Ipswich, both in the County of Suffolk, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

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Our invention relates to a fitting to enable screws to obtain a firm hold in substances in which otherwise they would be useless or unreliable.

Fig 1 of the drawing shows an external view, a longitudinal section and an end view respectively of one form of the fitting or bushing with four slots carried partially through the length of the tube from the inner end, the bore 30 being made with a screw thread throughout which thread however is of reduced depth as it reaches the inner end and the tube externally being screw threaded with a thread of diminishing depth for a part of its length. Herein the slots 1, 1 start from one and the same end.

Figure 2 shows by two external views taken at right angles to each other and a plan, a modification in which the slots 1, 1 opposite each other and the slots 2, 2 also opposite each other start from opposite ends of the tube and the bore internally is screw threaded throughout which screw thread however is of reduced depth as it reaches the inner end whilst externally the tube is only partially so threaded. 40

Fig. 3 shows by two similar external views and plan to the preceding, another modification in which one slot throughout is used with the screw threading as before.

Fig 4 shows, by like views to those shown of the arrangement Figure 1, another modification in which four slots commencing at one end of the tube are used and the exterior of the tube is plain, whilst the bore is screw threaded and tapered. 45

In these figures *a* is the tubular bushing, *b* the slots extending partially the length *f* the tube, *c*, Figure 3, a split or slot extending throughout, *d* the

Means or Apparatus for Securing Holding Screws or the like in Substances.

external screw threading—sometimes replaced by roughenings—e indicates the internal screw threading.

This invention consists of a simple device or fitting for use as a bushing which in some cases is, and in others is not, screwed or otherwise roughed on the outside, and which is split at one end (Fig 1) or both ends (Fig 2), or if more convenient may be split throughout its entire length (Fig 3). The hole to have a screw thread of full depth at one end tapered away to a shallow thread or a plain hole at the other end.

As an alternative a full taper thread may be cut in the bushing as shown in Fig 4 or as a second alternative the bushing may be of sufficiently soft material (such as lead) to permit the screw to cut its own way into it as is often desirable with wood screens in particular, or as a third alternative the bushing may have a plain taper hole to enable it to be used with a nail or plain pin or hook.

The constructions described embody a secure means of attachment for articles of the kind indicated by means of a bushing easily entered into a suitable hole in the supporting body and expanded and fixed therein by means of the screw or pin to be itself affixed without necessitating the aid of a separate nut or other secondary piece whereby to produce the expansion of the said bushing.

In other words this specification does not refer to bolt expanding bushes but to screw (or pin) expanding bushes.

The applications to which this can be adapted are extremely varied and numerous.

Amongst others might be mentioned the following;—

- 1) For attaching articles such as name plates, bells, pipes and the like to bricks, stonework, or plaster by means of screws.
- 2) For fixing a screwed hook to a wall, ceiling, or floor, for pictures, lamps, etcetera.
- 3) For purposes of lifting heavy stonework, or similar material by means of a screwed eyebolt.
- 4) For fastening stones, bricks, gutta-percha, and like materials to each other, in exactly the same way as can be done with set screws in the case of material which will hold a reliable screw thread such as iron and wood.
- 5) For securing structures, or machines to their foundations either on land or under water when the said foundations are capable of resisting the expansion of a bush inserted in them.
- 6) For clamping overhung architecture to the main portion when it would otherwise be unsafe.
- 7) For holding parts of delicate instruments together which will not satisfactorily carry a screw thread.
- 8) For attaching electrical instruments to slate or marble switch-boards without necessitating a hole being drilled completely through the said slate or marble which is often electrically objectionable or even dangerous in addition to possible disfigurement, extra expense and occasionally mechanical difficulties.
- 9) For attaching articles to glass without the objectionable strains set up by bolts or rivets. Such for example as fixing the letters of an advertisement to a plate glass shop window.
- 10) For connecting a flanged iron pipe to an existing stone-ware drain pipe to act as a branch.
- 11) For fixing heavy glass and porcelain vases and other receptacles to their metal pedestals.
- 12) For use in a screw hole which has been accidentally stripped of its thread.
- 13) For fixing iron casement frames and door frames to stone or brickwork.
- 14) For electric wiring, including the fixing of wire casing to walls, and

Means or Apparatus for Securing Holding Screws or the like in Substances.

attaching telephone, telegraph and other cables to buildings with the aid of insulating brackets and other such like uses.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1 A tubular fitting, or bushing device, for use for the purposes stated, split, or partially split at one, or more places, and having the bore tapered and screw-threaded with a thread of even or diminishing depth, either partially or through-out, substantially as described and shown by the drawings.

2. The screwed tubular split, or partially split and screw threaded bushing, or fitting constructed and applied as and for the purposes set forth and as shown by the drawings.

3. A tubular fitting or bushing device having a tapered bore adapted to receive a nail, pin, hook-shank or the like and be thereby expanded into a suitable hole in the supporting body and made a fixture therein as set forth.

4. A fitting, or bushing device for affixing a screw, or pin to a supporting body, by entering the bushing into a suitable hole in such body and therein expanding the bushing by means of the screw or pin to be affixed without the aid of a separate nut or other secondary piece whereby to produce the expansion of the said bushing, as set forth.

Dated the 25th day of November 1904

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[This Drawing is a reproduction of the Original on a reduced scale.]

F 1 6 B

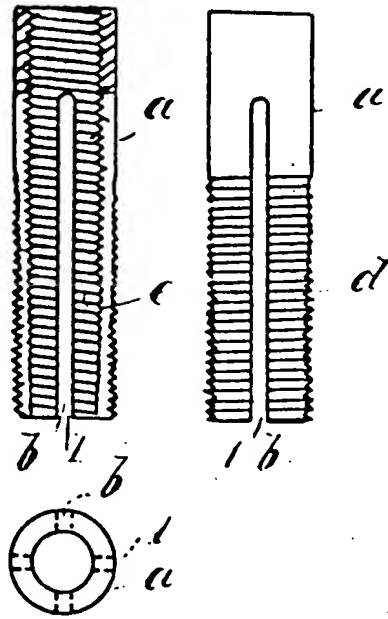


FIG 1.

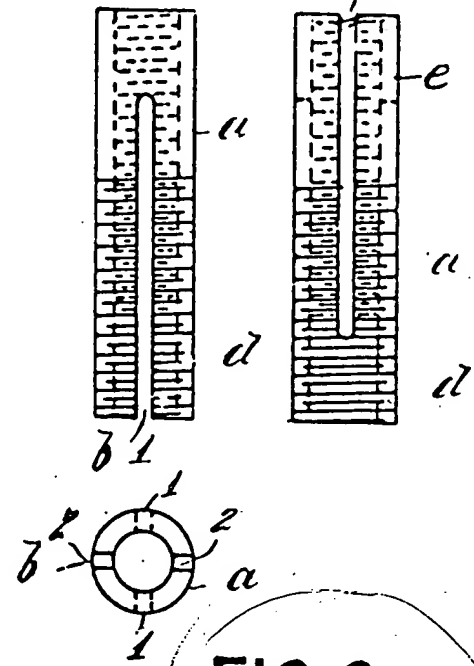


FIG 2.

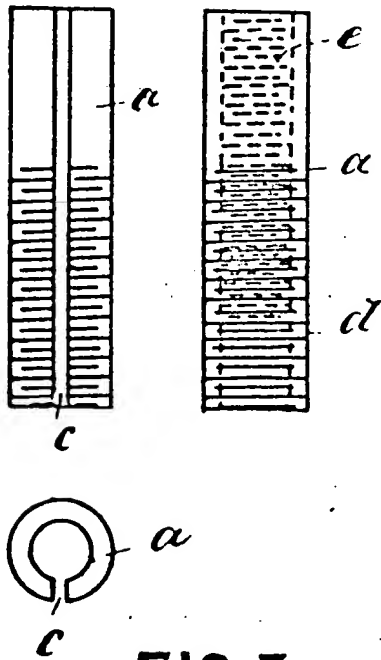


FIG 3.

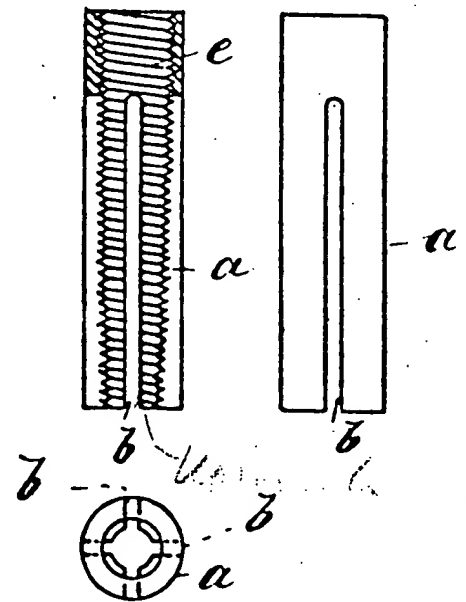


FIG 4.